Explor Anim Med Res,
Vol.6, Issue - 1, 2016, p. 5-7

ISSN 2277- 470X (Print), ISSN 2319-247X (Online)
Website: www.animalmedicalresearch.org

Editorial

SLOW POISONING THROUGH WATER INTAKE -- ARE WE CONSCIOUS?

Pollution of water is a topic of research to many scientists working in various fields. But the quality of water actually available for drinking and cooking to most of the people residing in rural India is not given proper attention. Water from the natural water bodies like river, canals etc. are not generally used directly for drinking purpose now - a - days, as many of our rural people are having some knowledge about the pollution level of those resources. Same may be applicable about the stagnant water of agricultural fields, particularly of lowland areas during rainy season. People rely upon the underground water resources including well water for drinking. Well water at rocky, sandy or lateritic soil area and stagnant pond water at clay-rich or loamy soil area is used as a media of cooking. It is a very common notion that these water sources are safe. If we analyze the whole matter critically, it appears that all the above perceptions are completely wrong!

As per the updated research, the main pollutants mixes with water can be listed.

1. Synthetic organic pollutants:

a) Detergents used for laundry and other washing purposes.

b) Pesticides used agriculture and other related purposes.

c) Slow degradable fertilizers used in agriculture.

d) Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs), the by-products in the manufacture of some herbicides and pesticides.

e) Polychlorinated biphenyls (PCBs), one of the most hazardous human made substances extensively used in manufacture of transformers, capacitors, hydraulic fluids, lubricating oils, paints, adhesive resins, inks, fire retardants, wax extenders etc. as excellent insulating and cooling fluids.

f) Different types of chemicals used by people as a part of modern life style which ultimately reach the water resources through different ways.

2. Inorganic pollutants:

a) Heavy metals – Cadmium (from pigment works, textiles, electroplating chemical plants); Lead (from various industries, mining, leaded gasoline); Mercury (from Industry of paint, paper, chlorine, caustic soda, fertilizers, pesticides); Chromium (from plating operations, aluminum anodizing, paint and dye operations including textile dyeing, leather industries, ceramic and glass industry, photography); Arsenic (vacuum in underground water layer releases it) etc.

b) Other inorganic pollutants – Cyanide (from metal cleaning and electroplating industry); Ammonia (from microbial degradation of decaying biomass and organic matter); Hydrogen sulfide (from chemical plants, paper mills, textile mills and tanneries); Nitrate nitrogen (from industrial wastes); Sulfite ion (industrial wastes) etc.

3. Eutrophication and algal nutrients: Decay of gathered excess organic substances cause unsightly green slime layer over the surface of water body.

4. Acid mine drainage: Coal mines, specially the abandoned mines release sulphuric acid and iron hydroxide into the streams.

5. Accumulation of salts in water: Evaporation of water in irrigated agriculture cause accumulation of salts on the soil surface which reach the water bodies.

6. Oxygen sag curve formation: With the introduction of polluted water loaded with organic matters into the river, the dissolved oxygen content in the water body rapidly gets depleted and it cannot support higher forms of aquatic life. It can be graphically represented as a curve.

During rainy season, the lodged water of agricultural fields is contaminated with different types of pollutants. This water is allowed to enter in the pond for storage. This stored water is used in different household purposes during other seasons. Washing of garments and utensils by detergent mixtures, bathing of human and domestic animals, use of feed materials for fishes etc. are performed regularly in the pond water. Water of these ponds reduces in volume gradually due to evaporation and use. The concentrated mixture of cumulatively accumulated chemicals in the pond water is taken indirectly as it is regularly used in the purposes like boiling of rice, preparation of curry etc.

Most of the canals are connected with rivers and carry at least partially the drained water of the catchment area and the water of the rivers. In many places, this water is used in the same purposes like pond water.

The water level of wells of rural India raise at a satisfactory level during the rainy season only. This is due to leaking of the water from the adjacent plot of agricultural operation, where different types of pesticides and fertilizers are constantly used. This well–water also become reduced in volume gradually and the materials inside it become concentrated. This water is also used during rest of the year for drinking, cooking and other related purposes.

Not only by arsenic or fluoride contaminated underground water in many places of rural India, but through intake of the surface water of ponds, canals and wells, a large number of rural Indians are getting slow poisons daily.

This major problem warrants further study.

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***Cite this article as:** Pattanayak S (2016) Slow poisoning through water intake - are we conscious? Explor Anim Med Res 6(1): 5-7.